

IN THE CLAIMS:

Please cancel Claims 43, 50, and 52-54, without prejudice or disclaimer of subject matter. Please amend Claims 41, 42, 49, and 51 and add new Claims 55-58, as indicated below. The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

Claims 1-40 (canceled)

Claim 41 (currently amended): A gradation conversion method for ~~[[a]]~~ radiation image data of ~~an object~~ cervical vertebra radiographed by a radiation photographing apparatus, said method comprising the steps of:

extracting an object area from the radiation image data;

calculating added pixel values for each y-coordinate by scanning to add pixel values in the object area in an x-direction;

calculating average pixel values for the y-coordinates, respectively, by dividing the added pixel values for the y-coordinate by a number of pixels corresponding to the added pixel values;

determining a maximum value among the average pixel values for the y-coordinates, respectively; and

determining coordinates of the object area based on the average pixel values calculated in said calculating step;

~~calculating a statistic from the average pixel values that are within a certain range,
including the coordinates in the object area determined in said determining step;
forming a gradation conversion curve based on the statistic calculated in said
statistic calculating step; and
converting a radiation value of the radiation image data by using [[the]] a
gradation conversion curve ~~formed in said forming step~~ defined based on the maximum value
wherein pixels in the object area are scanned in a y-axis direction to calculate the
average pixel values in said average pixel value calculating step and a coordinate at which the
average pixel values show a maximum or minimum is determined as a y-coordinate of the
coordinates.~~

Claim 42 (currently amended): A method according to Claim 41,
wherein, in said extracting step, [[an]] the object area is extracted based on the
~~basis of~~ an area through which radiation passes and an area adjacent thereto, and
wherein the adjacent area is within a given distance of the area through which
radiation passes.

Claims 43-48 (canceled)

Claim 49 (currently amended): A method according to Claim 41, further
comprising the steps of:

irradiating the ~~object~~ cervical vertebra with X-rays from an X-ray irradiating unit;
and
converting radiation transmitted through the ~~object~~ cervical vertebra into radiation
image data using a two-dimensional sensor.

Claim 50 (canceled)

Claim 51 (currently amended): A storage medium storing a computer-readable
program ~~which is~~ used to execute a gradation conversion method for radiation image data of an
~~object~~ cervical vertebra radiographed by a radiation photographing apparatus, ~~[[said]]~~ wherein
the program comprising is comprised of:

code for extracting an object area from the radiation image data;

code for calculating added pixel values for each y-coordinate by scanning to add
pixel values in the object area in an x-direction;

code for calculating average pixel values for the y-coordinates, respectively, by
dividing the added pixel values for the y-coordinate by a number of pixels corresponding to the
added pixel values;

code for determining a maximum value among the average pixel values for the
y-coordinates, respectively; and

~~code for determining coordinates of the object area based on the average pixel~~
~~values calculated by said code for a calculating step;~~

~~code for calculating a statistic from the average pixel values that are within a certain range, including the coordinates in the object area determined by said code for a determining step;~~

~~code for forming a gradation conversion curve based on the statistic calculated by said code for a statistic calculating step; and~~

~~code for converting a radiation value of the radiation image data by using [[the]] a gradation conversion curve formed by said code for a forming step, defined by the code for the maximum value determining step~~

~~wherein pixels in the object area are scanned in a y-axis direction to calculate the average pixel values using said code for calculating average pixel values and a coordinate at which the average pixel values show a maximum or minimum is determined as a y-coordinate of the coordinates.~~

Claims 52-54 (canceled)

Claim 55. (new): A gradation conversion method for radiation image data of cervical vertebra radiographed by a radiation photographing apparatus, said method comprising the steps of:

extracting an object area from the radiation image data;

calculating added pixel values for each y-coordinate by scanning to add pixel values in the object area in an x-direction;

calculating average pixel values for the y-coordinates, respectively, by dividing the added pixel values for the y-coordinate by a number of pixels corresponding to the added pixel values;

determining a maximum value among the average pixel values for the y-coordinates, respectively;

determining an x-coordinate showing an area of the cervical vertebra by using pixel values of pixels where an average pixel value at a y-coordinate of the pixels is a maximum value;

calculating a statistic from an area determined by the x- and y-coordinates; and

converting a radiation value of the radiation image data by using a gradation conversion curve defined based on the statistic.

Claim 56 (new): A method according to Claim 55, wherein the statistic is a maximum value, a minimum value, or an average value.

Claim 57 (new): A storage medium storing a computer-readable program used to execute a gradation conversion method for radiation image data of cervical vertebra radiographed by a radiation photographing apparatus, wherein the program is comprised of:

code for extracting an object area from the radiation image data;

code for calculating added pixel values for each y-coordinate by scanning to add pixel values in the object area in an x-direction;

code for calculating average pixel values for the y-coordinates, respectively, by dividing the added pixel values for the y-coordinate by a number of pixels corresponding to the added pixel values;

code for determining a maximum value among the average pixel values for the y-coordinates, respectively;

code for determining an x-coordinate showing an area of the cervical vertebra by using pixel values of pixels where an average pixel value at a y-coordinate of the pixels is a maximum value;

code for calculating a statistic from an area determined by the x- and y-coordinates; and

code for converting a radiation value of the radiation image data by using a gradation conversion curve defined by the code for calculating the statistic.

Claim 58 (new): A storage medium according to Claim 57, wherein the statistic is a maximum value, a minimum value, or an average value.